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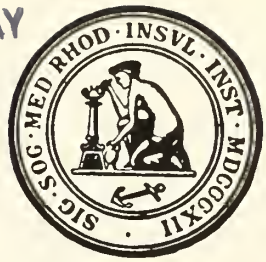

Volume 74, Number 7 July 1991

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Cover: Portrait of Benjamin Waterhouse, MD, by Gilbert Stuart, 1776. Courtesy of the Redwood Library, Newport, Rhode Island.

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EDITORIALS

Seventy-eight New Colleagues

As summer approaches each year, our 126 American medical schools ritually discharge their seniors into the world of residency training – declaring them to be physicians in title if not in reality.

On May 27 of this year Brown graduated its sixteenth medical class of men and women. These 78 new colleagues are described in the pages of this issue of the *Journal*. We welcome our new professional associates, 14 of whom will enter further training in local hospitals, and if past experience holds, will then establish their practices in this community.

We older physicians are reminded that the technical lore of medicine, which expands with each new graduating class of physicians, is also paralleled by an equal increase in their ethical obligations to medicine. The newer graduates have learned to consider things that never entered the thinking of our wisest teachers.

This issue also provides two essays on the controversial life of Benjamin Waterhouse, arguably Rhode Island's most distinguished physician and medical educator. Waterhouse, cofounder of the Harvard medical school, wrote a treatise on epidemic disease. The title page quotation from that brief monograph is worth repeating at this time: "*Plura enim in sinu Naturae latent, quae lynceos etiam oculos fugiunt: haec forte manent Posteros, eorumque futura promovebant, tentamina.*" (For many things hide in Nature's bosom which escape even the keenest eyes. These perchance will be uncovered through the efforts of future generations.)

Waterhouse appreciated the limits of his medical comprehension; as one of the outstanding teachers in early federal America he truly knew that each new class of colleagues – the future generations – will reveal things in nature now inextricably hidden to him. We welcome our new colleagues, then, as our former students, as our present peers and as our future teachers.

Stanley M. Aronson, MD

The Language of Epidemiology (II)

When the eminent British mathematician, Charles L. Dodgson (somewhat better known to us as Lewis Carroll) undertook to amuse his colleague's children with wonderland fantasies, he constructed this memorable dialog:

"When I use a word," Humpty Dumpty said, in a rather scornful tone, "it means just what *I* choose it to mean – neither more nor less."

"The question is," responded Alice, "whether you *can* make words mean so many things."

Language, as with all living things, evolves; and as we encounter new situations which require access to appropriately descriptive language, we either make up new words or we expand the meanings of words already in current usage.

Clinical epidemiology as well as its sister disciplines, biostatistics and medical economics, has also recognized the need to invest certain commonly used

words with newer, often narrower, meanings.

Beginning with the May, 1991 issue of the *Journal*, we shall occasionally publish comments designed to clarify the meanings of familiar words as they are now applied to focussed, epidemiologic text. These definitions are neither divinely determined, arbitrary nor randomly adopted. And they certainly do not represent the labors of some epidemiological Humpty-Dumpty asserting a definition by happenstance, fiat or whim. Rather, these meanings have come about through mutual work and consensus by those in clinical epidemiology who believe that the purpose of a scientific article is to illuminate rather than dazzle – or confuse.

If, for example, a particular series of results is described as "precise but inaccurate," or "showing great validity but little precision" some explanation is then in order. In everyday conversation words such as accuracy, precision, and validity tend to be used almost interchangeably. In quantitative medicine, however, their meanings are discrete and distinguishable.

Validity (unbiasedness) describes a lack of systematic error, that is, a lack of bias. If, for example, we were repeatedly testing a new laboratory weighing scale, employing a weight known independently to be 100 grams; and in five weighings we recorded the following results in grams: 121, 123, 120, 121,121, we would be justified in declaring that the scale shows great precision (that is, little variation) – but its results are invalid because of a consistent bias. Precision is defined as the measure of random variation around a mean. Thus, the smaller the variation, the greater the precision. Note that the mean is of the sample, (in this case, 121.1) and not necessarily of the true value (in this instance, 100 grams).

If, on the other hand, our sample of five consecutive weighings of a true 100 gram weight generated the following results: 93, 88, 116, 104, 99, (ie, a mean value of 100) we would then say that the sample of individually determined values showed great validity but little precision.

Accuracy, then, is a measure of exactness and has two components: precision and validity (unbiasedness).

A few paragraphs back, the phrase, "true 100 gram weight," was used. True seems, intuitively, to be an easy word to define; and yet when we depart from the realm of morality, it becomes difficult to explain its essence without using circular reasoning. A scientist recognizes, perhaps with sadness, that when he declares that a lump of brass has a true weight of 100 grams, he is really stating that by the most accurate instrument available – and after repeated weighings – he is assigning a value of 100 grams to the brass weight: It is likely a very close approximation, but still, only an approximation, of a standard (sometimes called the gold standard) that can be approached but never realistically achieved.

"Then you should say what you mean," the March Hare went on.

"I do," Alice hastily replied; "at least - at least I mean what I say – that's the same thing, you know."

"Not the same thing a bit!" said the Hatter. "Why you might just as well say that 'I see what I eat' is the same thing as 'I eat what I see'!"

Stanley M. Aronson, MD

Chronic Fatigue Syndrome

The chronic fatigue syndrome (CHF) is an increasingly prevalent problem characterized by easy fatiguability in the absence of chronic cardiac or respiratory illness, or evidence of myopathy, neuropathy or anemia which is often, but not always, accompanied by chronic musculoskeletal pain. Occasional patients will have mildly elevated sedimentation rates, high IgE levels or low B^{12} levels without anemia or macrocytosis. The patients are initially anxious and depressed but usually not suicidal. No significant abnormalities of the immune system are consistently demonstrable The etiology of this disease is unknown, but its resemblance to the fatigue that follows infectious mononucleosis suggests it may be related to a persistent viral infection. Patients with this syndrome often seek advice from a wide variety of physicians. They may see one or more primary care physicians as well as infectious disease specialists, allergists, ENT specialists, immunologists or hematologists, neurologists and psychiatrists. Often they undergo extensive immunologic, microbiologic and neurologic evaluation. Numerous blood tests, X-rays and scans are performed which may total in aggregate several thousand dollars. Families of these patients are often severely affected. Difficulty in maintaining active employment causes fi-

nancial stress. Relationships are strained and characterized by ambivalence over sympathy for the plight of the affected family member but frustration and sometimes suppressed anger over the inability of the patient to function in accustomed family roles.

Physicians often ponder as to how these patients should be managed. A thorough history and physical examination as well as screening tests for anemia, B^{12} deficiency, immune dysfunction and inflammation are certainly appropriate. EB viral titers are generally positive in most patients as they are in virtually all adults and are otherwise not informative. Testing for antibodies to the Lyme spirochete are usually negative. Other tests which often are performed are usually not worthwhile unless supported by historical or physical findings suggestive of a neurological or immunological disease.

Treatment generally should be limited to supportive counseling, and correction of B^{12} deficiency, if present. If the patient has musculoskeletal pain, appropriate instruction by a physical therapist in relaxation techniques to reduce muscle spasm is useful. Most patients will benefit from a program of increasing activity with encouragement to gradually increase the duration and intensity of physical activity. A trial of low dose gammaglobulin is reasonable in patients with documented and frequent viral illness. Although there may be exceptions, patients with chronic fatigue are best cared for by physicians who are willing to schedule them for regular visits to discuss their problem and who are sympathetic and supportive when they suffer setbacks. Repeated testing and continual referral of these patients to various specialists fosters an attitude of dependency in the patient which will tend to weaken the therapeutic effect of the supportive relationship with their primary physician. The physician should encourage a healthy life style of proper diet, adequate sleep, the avoidance of tobacco and excessive alcohol intake, regular physical activity, lessened dependence on psychoactive medication and improved family relationships. Although some patients will still continue to have severe symptoms, this approach is often rewarded by gradual improvement in stamina and endurance, and decreased absenteeism in those who are able to work. For most patients the goal should be a personal reassurance, given the constraints of our current knowledge, that all is being done for them that is reasonably likely to improve their condition.

James P. Crowley, MD

Relative Survival of the Gauche, the Sinister and the Adroit

"We are all born right-handed," says the bumper-sticker. "Some of us, however, manage to overcome this handicap." As with all blanket assertions, this one says more than had been intended. In its very bravado, it is a tacit recognition by the left-handed of the world that they are a permanent minority; that they are obliged to work with tools designed only for the right-handed majority; that the use of the left-hand as the dominant extremity is stigmatized in every known language; and – beyond these economic and social prejudices – that they are burdened with an increasingly documented biological disadvantage.

Language is rarely neutral; and it is assuredly not "even-handed" when it addresses the connotations and covert meanings of the words, "right" and "left." In English, in addition to laterality, the word "right" signifies correctness, moral obligation, justice, power, canonic law, truth, legitimacy: words befitting the majority. The place of honor is always to the right of God or king; and our highest secular authority in the United States is the Bill of Rights. The divine touch (as the left-handed Michelangelo had painted) is always bestowed by the right hand; and even Superman flies with his right hand slightly higher than his left.

The Latin word for right (*dexter*) persists into English in the felicitous word, dexterity. The French word (*droit*) is transferred into English as adroit. The Spanish (*derecho*) can be variously translated as proper direction or righteous; the German (*Recht*) also means the law; and the Slavic root for "right" also signifies truth.

English abounds in such laudatory words or phrases as: birthright, righteous, erectness, right-stuff, rectitude, right-on and right-of-way, which collectively serves to prove that word values are determined by the majority.

The word "left," on the other hand, is derived from the Old English, *lyft*, meaning weakness or infirmity and may be remotely

cognate with the Greek *lepros* (from which leprosy is derived). The Latin word for left, *sinister*, in contemporary English, conveys a sense of shadowed evil. The French term, *gauche*, signifies awkwardness or clumsiness in both languages. And in the English vernacular, we encounter left-behind, left-out, left-footed, in left-field (an unorthodox idea) – terms which suggest ineptitude, impairment or vacancy. Alas, even the word signifying skill in using both hands (ambidextrous) literally means right-handedness on both sides.

Why in some cultures is the left hand viewed as the evil limb and assigned only those tasks which are demeaning? A salutation by the left hand, in some settings, is interpreted as a base insult. Is there some basis, in reality, for this universal disparagement of left-handedness?

Geschwind and others have asserted that the risk of autoimmune disease (eg, ulcerative colitis, lupus, etc) as well as the organic dementias is measureably greater in the left-handed population.

In an unpublished study of Providence nursing home residents 80 years or older (Kane and Aronson) left-handedness was found in 4% of the cognitively normal and 22% in those with senile dementia of the Alzheimer type. Other observers have noted greater rates of dyslexia and other reading impairments in pre-adolescent left-handers.

A recent letter to the *New England Journal of Medicine* (Halpern and Coren, 324:998, 1991) provides further evidence of this alleged biological disadvantage. They note that, "... the proportion of left handers in the population decreases substantially with age (diminishing from 13% in 20 year olds to less than 1% in 80 year olds)", leading them to suggest that the trait of left-handedness is associated with decreased life span. They describe further studies which show that left-handers are disproportionately involved in birth stress, immune deficiencies and risk of physical injury, including industrial and vehicular accidents. These investigators had previously conducted a statistically controlled archival study of 2,271 retired major league players. They concluded, " . . . after the age of 33, the chance that a left-hander would die in any given year was 1 to 2% higher than the chance that a right-hander would die."

If left-handedness were a major genetic flaw, we would expect that the process of natural selection would have gradually reduced this trait to a very inconspicuous level about equal to its spontaneous mutation rate. But this has not happened. Left-handedness persists, generation after generation, at about the same rate of 9-14% in newborns. Perhaps, as with some other burdensome traits, left-handedness also carries certain subtle advantages. The carrier of the sickle cell anemia trait, for example, possesses a physiological mechanism which creates a barrier to the incursions of the parasite of malaria. The carrier of Tay Sachs disease seems to be endowed with a greater resistance to systemic tuberculosis. Perhaps, then, there exist analogies, such as these, to balance – at least partially – the gravity of left-handed vulnerability. Neurologists, for over a century, have recognized that the left-hander with aphasia secondary to cerebral infarction recovers verbal facility far more rapidly than the right-hander. Luria, during World War I, studied a large population of soldiers who had sustained major missile-induced head injury. In the right-handed sub-population, 95% developed severe aphasia and only 20% of these showed substantial recovery. In the left-handed sub-population, 77% developed severe aphasia but 70% showed substantial recovery.

Beyond the verbal belittling and beyond the nervous rejoinders, there emerges the grim reality that one out of every eight newborns is somehow endowed with a seemingly guileless trait which, in balance, diminishes his or her life-span.

This editorial cannot be offered as an unbiased or innocent commentary. (Will Rogers when told of an innocent bystander in New York City struck by an automobile expressed skepticism about the story since he didn't ever recall meeting a New York bystander who was truly innocent.) While the Editorial Board and Publications Committee have not as yet been polled, it is nevertheless a sobering certainty that both the Editor-in-Chief and the Managing Editor of this *Journal* are left-handers.

Stanley M. Aronson, MD

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AIR FORCE

The Brown University Program in Medicine Class of 1991

Stephen R. Smith, MD

The 16 Rhode Island students in this year's graduating class came from 14 different communities in the state. . . .

On May 27, 1991, 78 men and women received the Doctor of Medicine degree from Brown University representing the sixteenth class of physicians graduated from that institution in this century. If this class follows the pattern of preceding classes, approximately 11% will eventually enter the practice of medicine in the State of Rhode Island. Of the 1,094 physician graduates of previous classes, approximately 165 are currently practicing in Rhode Island, including current interns and residents.

The purpose of this article is to introduce the graduates of the MD Class of 1991 to the physician community in Rhode Island, as many will be your future professional colleagues.

A Portrait of the Class of '91

The 78 graduates are nearly equally divided between the sexes, with 51% being men, and 49% women. This is a pattern that has characterized the graduates of the Brown medical school for the past decade.

The racial/ethnic composition of the class, as shown in Table 12, shows considerable diversity, with nearly one-third of the class belonging to minority groups. Students from an Asian background represent the most rapidly growing ethnic group in the medical school over the last few years. This trend is likely to continue based on admission data to the eight-year Program in Liberal Medical Education (PLME) through which most future graduates will come.

Slightly more than one-fifth of the class are residents of Rhode Island. This percentage is slightly lower than previous years where about one-quarter of the class claimed Rhode Island as their legal state of residence. The 16 Rhode Island students in this year's graduating class came from 14 different communities in the state, with two each coming from Providence and North Providence. The high schools from which the students graduated equally reflects this diversity, with two students having attended Bishop Hendricken and the rest having come from 15 different high schools.

The international student came from Greece. The number of foreign students is likely to gradually increase as the PLME has gained international prominence in recent years.

Thirty graduates came through the combined AB-MD program at Brown known as the Medical Education Program (MEP). The MEP is the seven-year predecessor of the PLME. Students are admitted to the MEP directly from high school and pursue a seven-to-eight year continuum of liberal arts and medical education. One additional 1991 graduate belongs to

Stephen R. Smith, MD, is Associate Dean of Medicine and Professor of Family Medicine with the Brown University Program in Medicine, Providence, Rhode Island.

ABBREVIATIONS USED:

MEP: Medical Education Program
PLME: Program in Liberal Medical Education

the first group of PLME students admitted in 1985, but he completed that program in an extraordinarily short six years, two years ahead of most of his PLME classmates.

Traditionally-admitted students from four-year undergraduate premedical programs accounted for only four members of the class. This reflects the phasing-out of this traditional route of admission as the PLME grows in size to account for the large majority of the class. In place of these traditional medical students, Brown has entered into special agreements with selected premedical post-baccalaureate programs. These are students who decided on a career in medicine only after completing college. Ten graduates in the MD Class of 1991 came through this admission route.

Another 15 students (19.2%) were members of the Brown/Dartmouth Medical Program in which the students spend their first two years of medical school at Dartmouth before completing their last two years at Brown.

The remainder of the class was composed of fourteen students who transferred from other medical schools and three students who were part of the Early Identification Program at Providence College, Tougaloo College, and the University of Rhode Island. These latter students were offered provisional admission to the medical school during their sophomore year of college at the three institutions.

Not surprisingly, Brown University was, by far, the most common undergraduate college among the graduates. Nearly half the class (37 students) were Brown graduates. Dartmouth College ranked second with four members of the Class of 1990 having that school as their alma mater. Altogether, the graduates of the Class of 1991 came from 34 different colleges and universities.

The most common undergraduate major among the class members was biology, with 44% of the class selecting that as their undergraduate field of study. Eighty percent of the class were science majors while 9% majored in the social sciences and 11% majored in the humanities. Among the social science majors, anthropology was the most common choice, while English was the most popular choice among those majoring in the humanities.

Where They Are Going

While internal medicine remains the most frequently selected specialty, the proportion of the graduates entering internal medicine continues to remain at historical lows, as shown in Table 2. This is consistent with a national trend away from internal medicine and toward the surgical subspecialties and institutional specialties such as anesthesiology and radiology.

The proportion of the class entering specialties in primary care declined from the previous year, continuing a downward five-year trend. While the number of graduates going into internal medicine and pediatrics held steady from the previous year, the number of graduates going into family practice dropped by half. Figure 1, illustrates the specialty choices of the Class of 1991.

Table 3 lists all of the Class of 1991 graduates and where they will be going to do their residency training. Of the 75 graduates who will enter residency training next year (three are delaying their residencies for one year), 14 graduates (19%) matched with Brown-affiliated residency programs and will be staying in the state. Next to Providence, Boston seemed to be a particularly attractive place for the Class of 1991, with five of its members going to the greater Boston area for their first year of residency training. Baltimore, New York City, and Washington, D.C., each will be the home for three graduates.

New York will be the home for ten graduates next year and ranks second to Rhode Island as the most popular state for residency training. Table 4 lists those states where the graduates will be going for their first year of residency training. As with preceding classes, this class overwhelmingly preferred the Northeast and West Coast to the South and Central states. Nearly two-thirds (64%) will be spending their first year of residency in the Northeast and nearly one-quarter (23%) on the West Coast. In contrast, only six students (8%) will be in the South, and four students (5%) will be in the Central region.

Conclusion

The choice of residency programs by the graduates of the Brown University Program in Medicine MD Class of 1991 continues to reflect national trends in specialty choice. The recent modest plan for changes in physician reimbursement according to a resource-based relative value scale does not seem to have blunted the movement away from primary care specialties. On the other hand, the lessening of concerns about malpractice costs seems to have drawn more students into the surgical subspecialties, especially obstetrics and gynecology.

It is also interesting to note that the gender "gap" in these surgical subspecialties is slowly abating. Seven of the eight graduates going into obstetrics

Table 1. Demographic Characteristics of the MD Graduates of the Brown University Progam in Medicine Class of 1991

	No.	Percent
Sex		
Male	40	51.3
Female	38	48.7
Ethnic Group		
White	53	67.9
Asian	17	21.8
Black	3	3.8
Puerto-Rican	3	3.8
Portuguese-American	2	2.6
State of Residence		
Rhode Island	16	20.5
New York	13	16.7
California	7	9.0
New Jersey	7	9.0
Pennsylvania	6	7.7
Massachusetts	5	6.4
Connecticut	4	5.1
Colorado	3	3.8
Illinois	3	3.8
Other States	13	16.7
Other Countries	1	1.3

Figure 1. Specialty Choices of the Brown University Program in Medicine Class of 1991

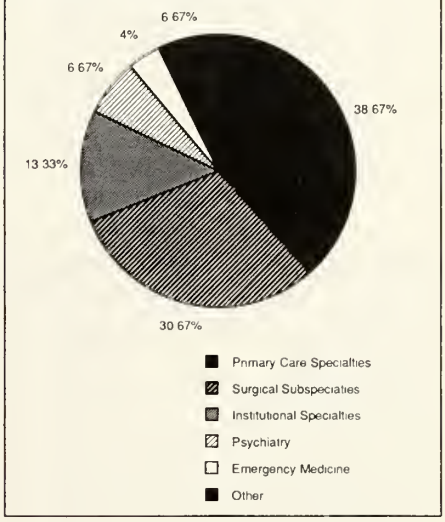

Table 2. Specialty Choices of the MD Graduates of the Brown University Program in Medicine Class of 1990

	Graduating Class									
	1987		1988		1989		1990		1991	
Specialty Choice	**No.**	**(%)**	**No.**	**(%)**	**No.**	**(%)**	**No.**	**(%)**	**No.**	**(%)**
Internal Medicine, total	23	(30.3)	22	(27.8)	20	(25.0)	15	(19.5)	15	(20.0)
Categorical Medicine	23	(30.3)	19	(24.0)	14	(17.5)	13	(16.9)	13	(17.3)
Primary Care Medicine	0	(0.0)	3	(3.8)	6	(7.5)	2	(2.6)	2	(2.7)
Pediatrics	11	(14.7)	10	(12.7)	7	(8.8)	10	(13.0)	10	(13.3)
Family Medicine	5	(6.7)	6	(7.6)	4	(5.0)	8	(10.4)	4	(5.3)
Medicine/Pediatrics	1	(1.3)	0	(0.0)	0	(0.0)	1	(1.3)	0	(0.0)
Total Primary Care	40	(53.3)	38	(48.1)	31	(38.8)	34	(44.2)	29	(38.7)
Surgery	9	(12.0)	9	(11.4)	6	(7.5)	10	(13.0)	9	(12.0)
Surgical Subspecialties	5	(6.7)	2	(2.5)	15	(18.8)	4	(5.2)	6	(8.0)
Ophthalmology	2	(2.7)	2	(2.5)	6	(7.5)	3	(3.9)	3	(4.0)
Orthopedics	1	(1.3)	0	(0.0)	4	(5.0)	0	(0.0)	2	(2.7)
Neurosurgery	0	(0.0)	0	(0.0)	2	(2.5)	0	(0.0)	0	(0.0)
Urology	1	(1.3)	0	(0.0)	1	(1.3)	1	(1.3)	1	(1.3)
Plastic Surgery	0	(0.0)	0	(0.0)	1	(1.3)	0	(0.0)	0	(0.0)
Otorhinolaryngology	1	(1.3)	0	(0.0)	1	(1.3)	1	(1.3)	1	(1.3)
Emergency Medicine	0	(0.0)	2	(2.5)	2	(2.5)	1	(1.3)	3	(4.0)
Obstetrics & Gynecology	3	(4.0)	4	(5.1)	7	(8.8)	4	(5.2)	8	(10.7)
Psychiatry	6	(8.0)	4	(5.1)	3	(3.8)	1	(1.3)	2	(2.7)
Neurology	3	(4.0)	4	(5.1)	3	(3.8)	1	(1.3)	2	(2.7)
Transitional	2	(2.7)	10	(12.7)	2	(2.5)	7	(9.1)	3	(4.0)
Institutional Specialties	7	(9.3)	6	(7.6)	9	(11.3)	13	(16.9)	10	(13.3)
Anesthesiology	4	(5.3)	2	(2.5)	4	(5.0)	3	(3.9)	1	(1.3)
Pathology	1	(1.3)	1	(1.3)	1	(1.3)	0	(0.0)	1	(1.3)
Rehabilitation Medicine	0	(0.0)	0	(0.0)	0	(0.0)	1	(1.3)	1	(1.3)
Radiology	2	(2.7)	3	(3.8)	4	(5.0)	9	(11.7)	7	(9.3)
Totals*	75	(99.7)	79	(100.1)	80	(100.3)	77	(100.1)	75	(99.9)

* Totals do not add to 100.0 due to roundlng

and gynecology are women. This may add to the problem of too few primary care physicians, as women graduates have traditionally been overrepresented in the primary care specialties, partially compensating for the relative paucity of male graduates going into those fields.

Acknowledgments

My thanks to Ruth Sauber in the Office of Medical Student Affairs, Brown University Program in Medicine for assistance in summarizing the data.

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Table 3. Brown University Program in Medicine Class of 1991 Residency Positions

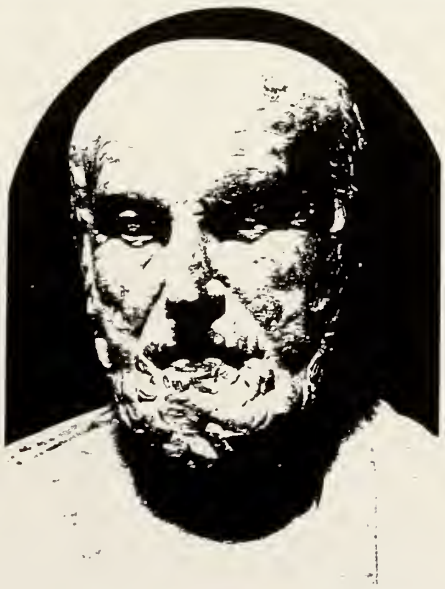
Name of Graduate	Hospital Name/Med. School Affiliation	Specialty
Allen, Scott	Miriam Hospital/Brown University	Internal Medicine
Bagas, Suzanne	Duke University Medical Center/Duke University	Pediatrics
Barstad, Kristin	University of Michigan Hospitals/Univ. of Michigan	Ob/Gyn
Benedict, Deborah	University of North Carolina	Internal Medicine
Biach, Laurie	Lenox Hill Hospital/Cornell University	Internal Medicine/Prelim
	Memorial Sloan-Kettering Cancer Center/Cornell	Radiation Oncology
Bonwit, Andrew	Children's Hospital Nat'l Med/George Washington	Pediatrics
Brenner, Richard	Georgetown University Hospital/Georgetown	Surgery
Caraballo, Victor	Univ. of Maryland Medical Hospital/Univ. of Maryland	Emergency Medicine
Carlsten, Kristine	Franklin Square Hospital Center/Johns Hopkins	Family Medicine
Chang, Keith	St. Vincent's Hospital/New York University	Transitional
	NYU Medical Center/New York University	Ophthalmology
Chireau, Monique	Yale-New Haven Hospital/Yale University	Ob/Gyn
Chu, Clifford	NYU Medical Center/New York University	Surgery/Prelim
	NYU Medical Center/New York University	ENT
Cipolla, Donna	Mount Auburn Hospital/Harvard Medical School	Internal Medicine
Collings, Carol	Roger Williams Hospital/Brown University	Internal Med/Prelim
	Hospital of St. Raphael/Yale University	Radiology-Diagnostic
Collins, Mary McNaughton	University Hospital/Boston University	Internal Medicine
Comeau, Leonard	Maine Medical Center/University of Vermont	Pediatrics
Dahl, Laura	St. Joseph Hospital/University of Arizona	Internal Med/Prelim
D'Amico-Martel, Adele	Butler Hospital/Brown University	Psychiatry
DaSilva, Manuel	Rhode Island Hospital/Brown University	Orthopedics
Dassopoulos, Themistocles	Beth Israel Hospital/Harvard Medical School	Internal Medicine
Davessar, Nitin	Strong Memorial Hospital/University of Rochester	Internal Medicine
Dennis, Kathleen	MUSC Medical Center/Medical Univ. of S. Carolina	Internal Med/Prelim
	University of Chicago Hospital/Univ. of Chicago	Ophthalmology
Desai, Tina	University of Chicago Hospital/Univ. of Chicago	Surgery
DiGiovanni, Christopher	Rhode Island Hospital/Brown University	Orthopedics
Do, Huy	Affiliated Hospitals/University of Washington	Internal Med/Prelim
	UCLA Medical Center/UCLA School of Medicine	Radiology-Diagnostic
Dobie, Jennifer	CMHC/St. Joseph Mercy Hospital/Univ. of Michigan	Internal Med/Prelim
	University of Michigan Hospitals/Univ. of Michigan	Physical Med & Rehab
Du Bose, Anthony	University of Southern California School of Medicine	Pathology
Dulaney, Eugene	Miriam Hospital/Brown University	Internal Med/Prelim
	University of Pennsylvania Hospital/Univ. of Penn.	Neurology
Farina, Anthony	Hospital of St. Raphael/Yale University	Surgery
Feldman, Andrew	Delaying Residency	
Fogarty, Tamara	Harbor-UCLA Medical Center/UCLA School of Medicine	Internal Medicine
Fras, Andrew	San Mateo County Mental Health Services	Psychiatry
Gange, Michele	Women and Infants Hospital/Brown University	Ob/Gyn
Giardino, Angela	Roger Williams Hospital/Brown University	Internal Med/Prelim
	Hartford Hospital/University of Connecticut	
Goilamudi, Smitha	Baptist Memorial Hospital/University of Tennessee	Internal Med/Prelim
	Joint Center for Radiation Therapy/Harvard Medical	Radiation Oncology
Goodwin, Christopher	Spokane Combined Family Medicine/Univ. of Washington	Family Medicine
Green, Jeffrey	Winthrop-University Hospital/SUNY Stony Brook	Internal Med/Prelim
	Emory University Hospital/Emory School of Medicine	Ophthalmology
Hammond, Kelly Condon	Monmouth Medical Center/Hahnemann University	Ob/Gyn
Hardenburgh, Gordon	St. Joseph Hospital/University of Colorado	Internal Med/Prelim
	Denver General Hospital/University of Colorado	Emergency Medicine
Harrigan, Patricia	St. Joseph Hospital/University of Colorado	Internal Med/Prelim
	Joint Center for Radiation Therapy/Harvard Medical	Radiation Oncology

Ho, Jane	State University of New York at Buffalo	Pediatrics
Iannitti, David	Rhode Island Hospital/Brown University	Surgery
Johnson, James	Madigan Army Medical Center/Tacoma	Transitional
Judice, Samuel	Albert Einstein/Albert Einstein College of Medicine	Peds/Adult Psy/Child Psy
Kim, Chiwan	Mount Sinai Hospital/CUNY Mount Sinai School	Pediatrics
Kooper, Grace	University of Massachusetts Hospital/U. of Mass.	Psychiatry
Lamont, Daniel	Harbor-UCLA Medical Center/UCLA School of Medicine	Internal Medicine
Leung, Yatwah	Carney Hospital/Boston University	Internal Med/Prelim
	NYU Medical Center/New York University	Radiation Oncology
Lim, Patty	Johns Hopkins Hospital/Johns Hopkins University	Internal Medicine
Luster, Sharon	Howard University Hospital/Howard University	Surgery
Malkin, Julie	Delaying Residency	
Mendes, Celia	Duke University Medical Center/Duke University	Ob/Gyn
Miner, Thomas	Walter Reed Hospital (Bethesda)/Army	Surgery
Natividad, Maria	George Washington Univ. Hospital/G. Washington U.	Ob/Gyn
Nigut, Karen	Rhode Island Hospital/Brown University	Primary Care Medicine
Northfield, Mark	University of California, San Francisco	Surgery/Prelim
Pao, Linda	Miriam Hospital/Brown University	Internal Med/Prelim
	New England Medical Center/Tufts University	Neurology
Plancher, Seth	Winthrop University Hospital/SUNY Stony Brook	Ob/Gyn
Pratt, Stephen	Miriam Hospital/Brown University	Internal Med/Prelim
	Beth Israel Hospital/Harvard Medical School	Anesthesiology
Quirk, Daniel	Johns Hopkins Hospital/Johns Hopkins University	Internal Medicine
Reddy, Uma	Johns Hopkins Hospital/Johns Hopkins University	Ob/Gyn
Romano, John	UCSD Medical Center/UCSD School of Medicine	Surgery
Rost, James	Duke University Medical Center/Duke University	Pediatrics
Ryan, Susan	George Washngton Univ. Hospital/Geo. Washington U.	Ob.Gyn
Shuman, Pamela	Rhode Island Hospital/Brown University	Pediatrics
Simmons, Emma	Memorial Hospital/Brown University	Family Medicine
Stanley, Andrew	Affiliated Hospitals/University of Massachusetts	Surgery
Steinberg, Ellen	Affiliated Hospitals/University of Washington	Pediatrics
Stern, Joel	The Medical Center of Delaware/Thomas Jefferson U.	Emergency Medicine
Suarez, William	University Hospitals of Cleveland/Case Western Reserve	Pediatrics
Taylor, Mark	San Diego Naval Hospital/Navy	Internal Medicine
Tefft, Carvel	St. Joseph Hospital/University of Arizona	Internal Medicine
Tittmann, Robert	Cambridge Hospital/Harvard Medical School	Transitional
	Cambridge Hospital/Harvard Medical School	Psychiatry
Towbin, Michael	Glendale Adventist Medical Center/Loma Linda Univ.	Family Medicine
Varghese, Reuben	Strong Memorial Hospital/University of Rochester	Primary Care Medicine
Varma, Madhulika	University of California, San Francisco	Surgery
Yang, Chun Esther	Delaying Residency	
Zarin, Dina	New England Medical Center/Tufts University	Pediatrics

Table 4. State in Which the First Year of Residency Training is Located for the Brown University Program in Medicine MD Class of 1991

State	No.	%
Arizona	2	(2.7)
California	9	(12.0)
Colorado	2	(2.7)
Connecticut	2	(2.7)
Delaware	1	(1.3)
District of Columbia	5	(6.7)
Illinois	1	(1.3)
Maine	1	(1.3)
Maryland	6	(8.0)
Massachusetts	8	(10.7)
Michigan	2	(2.7)
New Jersey	1	(1.3)
New York	10	(13.3)
North Carolina	4	(5.3)
Ohio	1	(1.3)
Rhode Island	14	(18.7)
South Carolina	1	(1.3)
Tennessee	1	(1.3)
Washington	4	(5.3)
Total*	75	(99.9)

*Total does not equal 100 due to rounding



Hippocrates. Roman statue of the Hellenistic period. Fourth century B.C.

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Introducing Medical Students to Patients: Students' Perspective

Lynn C. Epstein MD
Edward Guadagnoli, PhD

"Well Doctor – what then should I call a . . . medical student?"*

The participation of medical students in patient care raises issues which directly concern medical educators as well as the providers and recipients of medical care.[1] Present guidelines for structuring medical student involvement are based on technical and legal considerations [2-5]. While informed consent is the policy, methods to achieve it are as much at issue here as they are with work involving investigational new drugs. How information is shared is as important as what is shared if comprehension and decision-making are to be maximized.[6,7] The President's Commission for the Study of Ethical Problems in Medicine and Biomedical and Behavioral Research has underscored this point.[8]

A recent survey of medical school deans, department chairpersons, and hospital administrators[9] delineates the discrepancy between common practice and the guidelines offered by the US government and by the Joint Commission on Accreditation of Hospitals (JCAH). Government and JCAH guidelines recommend that patients be specifically informed of student status and participation.[10,11] Cohen *et al*, found that only 37.5% of the teaching hospitals surveyed specifically informed patients about the role of medical students in providing care and only 51% of the medical schools surveyed had a policy requiring students to clarify their status. One possible explanation for the apparent discrepancy between the guidelines and practice is the perceived need for the exercise of personal and professional judgment in accomplishing informed consent.[12]

The current survey provides preliminary insights into medical students' thoughts about their interactions with patients during the premedical phase of the continuum program at Brown University's Program in Liberal Medical Education (PLME). Participants were college juniors, involved with the Affinity Group Program at Brown University in 1988 and 1989. It was hypothesized that the views of students, because of their lack of direct patient care experience, would conform more closely to

ABBREVIATIONS USED:

AMSA: American Medical Student Association
JCAH: Joint Commission on Accreditation of Hospitals
PLME: Program in Liberal Medical Education

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**Kra, Siegfried, "Leysin" in The Three-Legged Stallion and Other Tales from a Doctor's Notebook, W.W. Norton & Company, New York, 1989, p. 115. (102-135)*

the JCAH guidelines and Federal recommendations than the results reported by Cohen *et al.*

Methods

Participants in this study were the students participating in the Brown University Affinity Group Program. Each year at the beginning of second semester, the Program sponsors a special discussion meeting to stimulate early student consideration of the issues pertaining to their involvement in the care of patients.

The Affinity Group Program is an advising and educational component of the Program in Liberal Medical Education (PLME) at Brown, an eight-year educational continuum for undergraduate and medical education. Beginning in the junior undergraduate year and continuing through the end of the second year of medical school, the Affinity Group Program links small groups of students with medical and non-medical faculty around areas of common interest. Each group has a medical student affinity group fellow, who assists with advising and educational endeavors.

During the meeting, each Affinity Group discussed informed consent issues for medical student-patient interactions. Prior to the meetings, copies of the article by Cohen, *et al*[9] and the editorial by Greer[12] were distributed by mail to all participants in the Junior Affinity Group Program. After an hour of discussion, each group had one student member present the views of the group, followed by a moderated discussion. While the sample size was small, the discussion format provided an opportunity to profile student views. Questionnaires were used to poll the views of participants. Although responses were anonymous, information on sex and program level were requested.

1988 Survey

For the 1988 survey, the first half of the questionnaire was modelled after the information reported by Cohen, *et al.*[9] The questions addressed the responsibility of teaching hospitals, medical school clinical departments and the medical school administration for obtaining informed consent from patients when medical students are involved in their care. Other questions dealt with the participation of medical students in invasive, diagnostic or therapeutic procedures (lumbar puncture, paracentesis, bone marrow aspiration), and the use of blanket versus specific consent.

The second half of the questionnaire extended these concepts to two additional situations: care of the comatose patient and the confused, disoriented or unstable patient. Finally, several questions addressed the student's sense of responsibility, as well as the patient's sense of confidence.

1989 Survey

The second survey, administered to the next junior class, was greatly simplified, based on the answers to the 1988 study, with the intent of validating and further elucidating those findings. Students were given the common situation of being directed by the resident to perform a basic procedure on a given patient (venapuncture) and queries on the way they would represent themselves to the patient. The options included introducing themselves: as a medical student, with and without explanation of what this means; as a doctor; and two contingent categories, one based on instructions from the resident or professor and the other based on the student's interaction with the patient.

A similar program on the ethics of how students are involved with patients occurred during the 1990 year using several AMSA videos which profiled students involved with patients, house officers and doctors. Student views were expressed informally, since it was felt to be redundant to repeat the questionnaires.

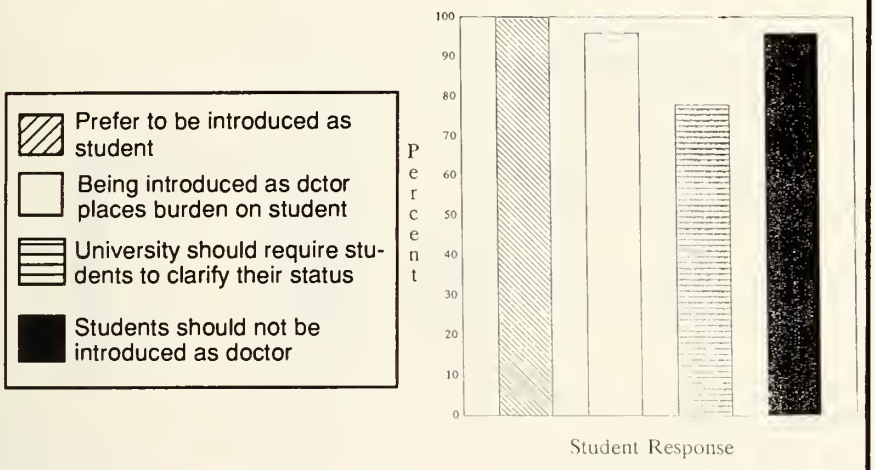
Results

1988 Survey

Twenty-seven (69%) junior PLME students returned questionnaires. Most respondents were males (74%) and 52% were science concentrators. While proportionately more males responded, the distribution of these characteristics roughly approximated that of the students who were present at the discussion. While students had not yet begun their clinical rotations, nearly half (44%) had been admitted to a hospital and 41% had undergone surgery. Similarly, most had family members who had been hospitalized (78%) or who had undergone surgery (67%).

Clarification of Medical Student Status. All (100%) students reported that they prefer to be introduced to patients as a student. Nearly all (96%) indicated that being introduced as a doctor places a burden on them to be someone they are not (Figure 1). Nevertheless, a fair proportion of students indicated that being introduced as a doctor

Figure 1. Percentages for 27 students who responded to questions dealing with the clarification of student status.



helps instill student responsibility (57%) and patient confidence (69%). Some students were unsure as to how to answer the latter questions about responsibility and patient confidence, as evidenced by the fact that 6 and 4 students, respectively, responded "don't know."

The majority (of medical students) indicated that the University should require students to declare their status to patients or should encourage students to do this.

Most students (96%) did not know if Brown had a policy clarifying students' role in the assessment and care of patients. With the exception of three students who indicated "do not know," all agreed that the University should have a policy. The majority indicated that the University should require students to declare their status to patients (78%) or should encourage students to do this (91%). All agreed that Brown should have a policy on this matter and that students should not be introduced as doctors (96%) (Figure 1).

Students preferred that they be instructed in whether and how to clarify their status to patients. They reported that this should be introduced at multiple points in the curriculum, during medical ethics (89%), interviewing (89%), and physical diagnosis (56%) and also during clerkship orientation (74%).

Informed Consent. Students overwhelmingly agreed that teaching hospitals (96%) and medical school clinical departments (93%) should specifically inform patients that medical students will be involved in their care and that informed consent is necessary before medical care is rendered (92%). Of those with an opinion, 100% indicated that patients should be told directly that students will be involved in their care and 88% indicated that care should be given only after patients' voluntary informed consent is obtained. Excluding 9 students who were uncertain, 77% indicated that consent for student participation in care should be obtained for each specific procedure: consent should not be blanketed to encompass all care (Figure 2).

Realizing that the perception of the need for informed consent may vary with treatment circumstances, students were asked to provide their views with respect to several specific treatment situations. Few students (16%) stated that they should not participate in invasive diagnostic or therapeutic procedures. When students are involved, however, 86% agreed that patients should be specifically informed of the status of the person actually performing the procedure. In the case of either a comatose patient or a confused, disoriented, unstable patient, nearly three-quarters agreed that it is necessary to obtain informed consent for involvement in care. In either situation, 91% agreed that before involving a student in care, informed consent should be obtained from a responsible family member. If a family member is not available 76% indicated that providing care to a comatose patient would be acceptable, however, 10 students did not know what to do in this case. For the confused patient, fewer students[3] were unsure how to behave, while 63% indicated that providing care would be okay.

1989 Survey

There were 39 PLME students completing questionnaires for a response rate of 78%, of which 23 were female (59%) and 16 were male (41%).

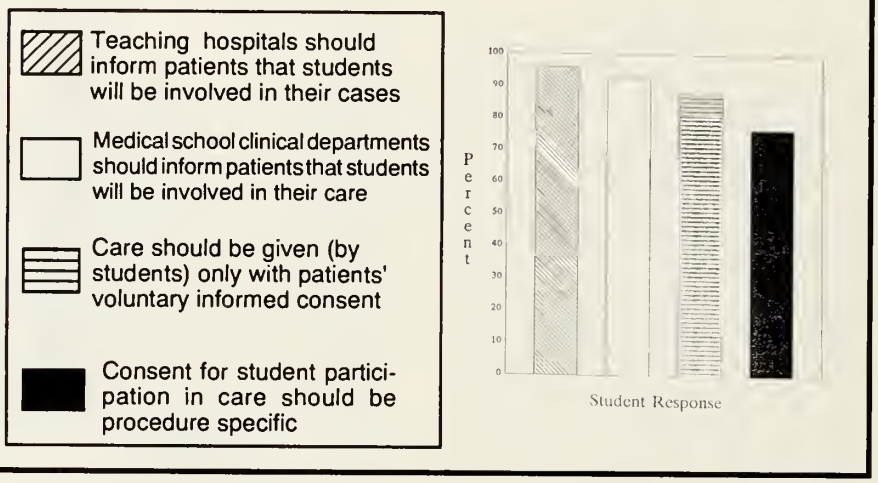
In agreement with the 1988 survey, none of the PLME students opted to introduce themselves to the patient as a doctor (Figure 3). Twenty-one students

(54%) said they would introduce themselves as a medical student, with 7 of them carefully explaining what this means and 5 providing no further explanation. Eighteen students (46%) had contingency responses, with 11 deciding based on instructions from the resident or professor and 7 deciding based on their interactions with the patient.

The results from the 1989 survey, where none of the students indicated they would introduce themselves as doctor, fully support those from the previous year, where all said they would prefer to be introduced as student. The second survey extends the results of the first by looking at whether students would elaborate to patients what their student status means as well as whether they would rely on contingencies to decide their actions.

In a subsequent Junior Affinity Group Program on how students should be introduced to patients in 1990, although no formal survey was done, student views supported the above findings.

Figure 2. Percentages for 27 students who responded to questions dealing with the provision of informed consent



Discussion

The data presented here strongly suggest that PLME students at Brown, during the undergraduate portion of their medical training, feel that medical students should be identified to patients as "students", not as "doctors." What is most striking is the consensus against mislabeling oneself to the patient. As one student succinctly commented, "Telling a patient that a student is actually an MD is a lie." Another echoed this sentiment, saying, "The ranks of American medicine are fraught with an indefensible paternalism. This ought to change with us."

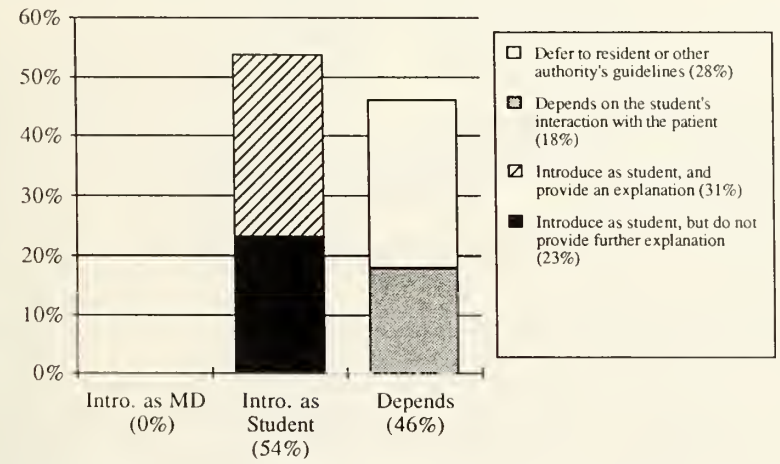
These results support student willingness and preference for compliance with JCAH and Federal guidelines. While most students did not know if Brown had a policy dealing with clarification of the students' role in the assessment and care of patients, all agreed that it should have such a policy. Similarly, students expect teaching hospitals and medical school clinical departments to take specific initiatives to inform patients of medical student participation in care and to obtain informed consent.

Not surprisingly, students were uncertain how to modify their views when the condition of the patient made it impossible to obtain informed consent directly, *eg*, for the comatose or the confused, disoriented or unstable patient. However, they clung to their view that informed consent was essential. It appears that the more complicated the actual patient situation, the harder it is for the student in this study to determine the ethical posture. In all likelihood, this is the case for medical students and physicians as well as for the junior undergraduates surveyed.

. . . students expect teaching hospitals and medical school clinical departments to take specific initiatives to inform patients of medical student participation and to obtain informed consent.

Given the clear US government and JCAH guidelines emphasizing the patient's right to know the training level of professionals involved in the provision of care and the consensus observed among PLME junior undergraduates, how can one address the discrepancy between policy student sentiment and implementation? The data presented here assert that students are predisposed to be forthright, although they are uncertain of all the implications. If one grants an early student bias for candor, one must look to the educational and training

Figure 3. 1989 survey: student choice for introduction to a patient in a hypothetical situation.



process to evaluate the compromise which arises during professional development.

As junior undergraduates, the students in this study have had no professional patient contact. An interesting issue is to what extent there is an awareness that a possible conflict may arise between the patient's right to informed consent and the educational needs of medical students. Germane comments, provided anecdotally by students at the end of the survey, raise issues pertaining to educational and training needs for students, as well as to the exigency for additional knowledge to delineate the issues more clearly. In the words of one student,

> *I feel that the patient has the right to know who is going to be taking care of him. However, I wonder if patients could prevent medical students from taking part in their treatment, would a significant number of patients exercise this option? If so, how would students learn?*

Do medical students modify this mandate for veracity in order to proceed pragmatically with their own training needs? Writing on this subject, a (then) fourth-year medical student wrote in an award-winning essay[5]:

> *It is ironic that we must unlearn the ethics our parents and society have strived so hard to teach us. We have been taught that the truth is paramount, yet during our medical training we learn to lie. We lie about who we are, pretending to be real doctors . . . There lies a dichotomy: on the one hand, patients have the right to expect competence from their physicians while on the other, student physicians need to practice their skills to attain such competence. The key to ethics in this issue is supervision . . . teachers must provide a consistent ethics during medical training and provide graduating physicians with an approach they can apply throughout their careers.*

Evidently, there is an acute awareness of the conflict and a perception that the educators, teachers and clinical faculty have the responsibility to provide the requisite supervision and guidance. JCAH and Federal guidelines address the need to inform patients of student status while preserving the opportunity for training. These results suggest that student positions are more in line with JCAH and Federal guidelines than are those of medical school deans and hospital administrators.[9]

. . . a possible conflict may arise between the patient's right to informed consent and the educational needs of the medical student.

Data are reported here from small samples of undergraduate students in an eight-year medical education continuum. However, the almost total uniformity of their responses suggests that a more systematic survey of premedical students would yield similar findings. It should be remembered that surveys were completed subsequent to a discussion of the Cohen, *et al*[9] article. Responses to these questions by students who have not been exposed to that article might vary from those reported here. The licensing agencies have taken a somewhat hands-off position with regard to medical students. In an informal mail query of the 50 states, to which 42 responded, the authors found that only 11 states have any specific regulations pertaining to medical students. In general these states made reference to the accredited medical schools, or a supervising physician for oversight, and one (Massachusetts) specifically requires informed consent from the patient. The most extensive

regulations of students are in New Jersey, New York, Virginia and the District of Columbia. Thirty-two states, including Rhode Island, have no explicit reference to medical student regulation.

Given the polarity of the views expressed by medical students and those responsible for the oversight of medical education and patient care, further sampling along the educational continuum is necessary to delineate the evident modification of students' stance on their involvement in the care and assessment of patients. A longitudinal study to determine medical students' views at various points in their education is currently underway.

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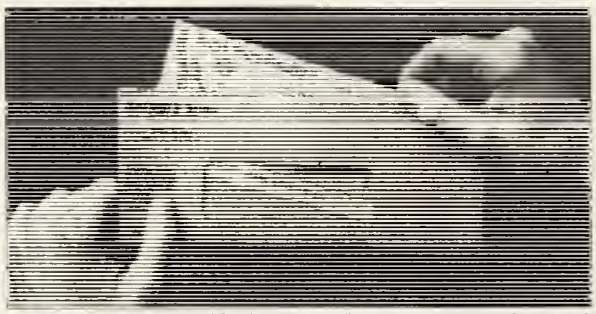

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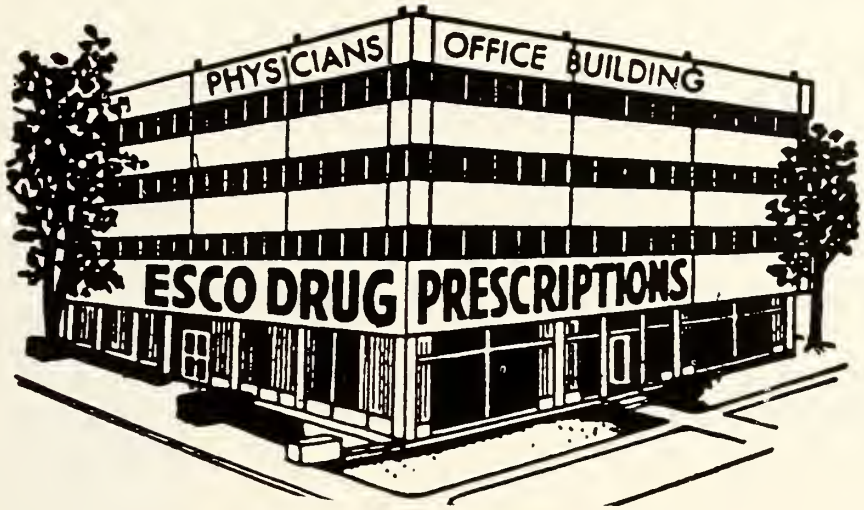

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Yellow Fever: The 1978 Outbreak in Trinidad and Tobago

Peter V. Chin Hong

"So half a century has passed since urban yellow fever claimed any victims, terrorized any population, paralyzed any trade, and moved governments to loosen the tight purse strings of their treasury ministers to counteract the threat."[1]

It seemed natural that complacency would set in. After all, wasn't it true that no real epidemic of yellow fever had occurred for decades? The last great scourge in a large city took place in Rio de Janeiro in 1928 and 1929.[2] A new vaccine rated as "the best and safest of all viral vaccines in use today"[3] and powerful insecticides to combat the vector mosquito added to this sense of complacency.

But Trinidad remained vigilant. Too many of her people had lost their lives to the disease which came on suddenly and left the skin a trademark jaundiced, mallow hue. The case fatality rate during an epidemic could run as high as 50%[4]. An epidemic in 1894, an outbreak in 1954 with 17 reported cases,[5] and again in 1959 when an epizootic in monkeys resulted in a single human case[6] would command respect from a government that had previously gone on an aggressive anti-vector campaign, it seemed, but to no avail. When the Ministry of Health received reports on November 7, 1979, that monkeys were dying in the Guayaguayare forest in South East Trinidad,[7] it quickly mobilized its forces. The infrastructure had already been set in place for a war with the disease which the Maya called "*xekik*", the "blood-vomit" disease.[8]

The origin of yellow fever has been extensively debated. The most plausible theory proposes that jungle yellow fever, the natural cycle of the virus maintained by monkeys and sylvatic mosquitoes in the forest, is indigenous to the Americas. The mosquito vector of the urban form of the disease, *Aedes aegypti*, was inadvertently imported from Africa by slave ships when they sailed to Americas. This theory would hold especially if we assume that the pre-Columbian Mayan term, *xekik*, was indeed jungle yellow fever.[9]

It was not until the seventeenth century that we had accounts of outbreaks that were unmistakably yellow fever. In the eighteenth century, North America was plagued by no fewer than thirty-five epidemics, the most notable being the Philadelphia epidemic of 1793 when the city sustained a loss of one-fifth of its population.[10] The disease also flourished in the Caribbean, South America and Africa, with occasional forays to seaports of North America and Europe, including Plymouth and Southampton.[11] Indeed, yellow fever surpassed even malaria in the morbid attention it drew, partly because it was often more lethal, and partly because it "threatened to disrupt Ameri-

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can imperial expansion into the Caribbean."[12]

It was this real threat that may have provided the impetus to conquer the disease. In 1900, "backed by the prestige and resources of the United States Army,"[13] a commission of army surgeons under the direction of Walter Reed was sent to Cuba to begin a careful study of the disease. After excluding bacterial spread, they focused their attention on the mosquito as a possible vector, using human volunteers in their experiments. They proved conclusively that the mosquito acted as the intermediate host and that the disease was not spread by contagion.[14] Hence when the United States turned to building a strategic canal across the Isthmus of Panama, they transformed what was once a notorious fever coast to a place where disease was of "trifling proportions."[15]

Yellow fever was certainly a formidable killer to the Americans. It is an acute, infectious disease caused by a group B togavirus (flavivirus) with a short incubation period.[16] Classical yellow fever is recognized during epidemics when the disease is relatively easy to diagnose. Three to six days after the bite of the infected mosquito, the acute illness is characterized by fever, chills, headache, vomiting and muscular aches. A remission may occur three or four days later but only lasts a few hours, followed by renewed fever, jaundice and hemorrhage. Yellow fever may vary in intensity from the classical type with a 50% mortality rate to a very mild attack with more pronounced fever and headache. The clinical diagnosis is often very difficult and almost impossible in some cases, so that special diagnostic techniques must be used.[17] In Trinidad, screening is undertaken by personnel from the Caribbean Epidemiology Center (CAREC), funded in part by the Pan American Health Organization (PAHO).

The discovery, in 1927, that a species of monkey, Macacus rhesus, was susceptible to the disease, hastened the understanding of the epidemiology of yellow fever.[18] It had also been found that yellow fever had been occurring in areas completely free of *A. aegypti*. It is now generally known that there are two different types of yellow fever that occur in two distinctly different types of environment.[19] Apart from their epidemiological difference, they are etiologically and clinically identical.[20] Urban (epidemic) yellow fever is confined to man in concentrated populations and is transmitted by *A. aegypti*. Jungle (sylvan) yellow fever complex requires four factors: the jungle reservoir (most frequently monkeys), the vector (usually a mosquito of the genus *Haemagogus*), man, and the virus.[21] It is interesting to note that it appears that the sylvan form of the virus is somewhat less virulent than the urban type and could therefore immunize the population by an "attenuated natural infection."[22]

In a 1986 publication entitled "Prevention and Control of Yellow Fever in Africa," the World Health Organization recommended that each country in a yellow fever endemic zone define a national strategy, "taking into consideration their epidemiological and socioeconomic conditions." This strategy entails primarily a national political commitment, the distinction of endemic and possible epidemic zones in the country, the establishment of an epidemiological surveillance system, the drawing of contingency plans for emergencies, mass immunization of groups at risk, and the control of mosquito vectors where practical.[23] I will show how Trinidad had already set up the necessary infrastructure to deal with an impending yellow fever epidemic by the time news reached the health authorities of the monkeys' deaths in November, 1978.

The government of Trinidad and Tobago was fully committed to provide long term support to guarantee the health of its nation, with special attention placed on infectious diseases. In 1972, the Prime Minister, Dr Eric Williams, approached PAHO to see if they were interested in setting up a disease surveillance center based in Trinidad. By January 1, 1975, a multilateral agreement resulted in the opening of the Caribbean Epidemiology Center (CAREC). The Caribbean states would provide approximately 60% of CAREC's core budget, with the remaining 40% coming from PAHO/WHO and the Overseas Development Ministry of the United Kingdom. CAREC's primary objective was "to establish and consolidate disease surveillance in the Caribbean area, first for communicable diseases. . ." They would also provide laboratory and surveillance training for Caribbean personnel, provide diagnostic laboratory facilities as well as do relevant research.[24] A standing committee established in 1975 by the Ministry of Health was given the responsibility of providing technical advice on yellow fever surveillance . Representatives from the Health Ministry, the Department of Forestry, the University of the West

Indies and CAREC comprised the committee.[25]

The importance of good epidemiological surveillance cannot be over-emphasized. The early detection of human cases of yellow fever, for example, is essential so that endemic transmission and impending epidemics can be recognized and appropriate health forces immediately mobilized. In the 1978 outbreak in Trinidad, hospitals were asked to ensure that the blood from all febrile jaundice cases be investigated to confirm the presence of the virus. Physicians, especially those who were likely to see forest workers, had been immediately alerted by their County Medical Officer and were supplied with sterile tubes for the collection of blood specimens.[26] Surveillance and quarantine stations were established at all ports of entry.

Mosquito surveillance began as soon as the first reports of the sick monkeys had come in. *Haemagogus* mosquitoes in the vicinity were captured and virus isolations were performed at CAREC. In addition, *Haemogogus* from the Chaguaramas forest in the North West of Trinidad, near large cities, were also checked. Finally, oviposition traps for *Aedes aegypti* were place around hospitals so that total eradication of *A. aegypti* could be verified. Yellow fever cases, if they occur, would be admitted to these hospitals with a minimal risk of transmission.[27] Monitoring of the *A. aegypti* population in the country should be an ongoing process. (The current trend in the Americas is scary with the *Aedes* mosquito reinfesting areas where it had previously been eradicated and even encroaching upon territory where it had not been previously detected.)[28]

A corresponding surveillance of sick and dead monkeys was intensified by the Veterinary Public Health Unit of the Ministry of Health, the Forestry Department of the Ministry of Agriculture, and the Defense Force. By December, 1978, there were 10 dead monkeys found in the Guayaguayare forest but no reported sick or dead monkeys in the other forested area. It was known that howler monkeys were especially susceptible to the yellow fever virus. Previously, staff of the Forestry department, as well as hunters, had been organized, "To report any unusual monkey behavior, overt sickness or death."[29] When sick and dead monkeys were observed on November 7, a number of actions followed closely.

The recommendations of the Standing Committee also resulted in the immunization against yellow fever of certain high risk groups, a policy implemented before the 1978 epizootic disease outbreak in monkeys. These included workers from the Government and private sector who enter forests (armed forces, hunters, forest rangers, woodcutters and charcoal burners), as well as residents of villages within and near the forested areas.[30] It has been suspected that the seven deaths and 18 cases that resulted were primarily non-targeted groups. They were the illegal marijuana, or as the local people say, '*ganga*' farmers who had penetrated deep within the forests to escape police detection.[31] Prior to the intensification of the program, about 200,000 such people had been immunized.[32] By February 22, 1979, 638,565 people were immunized, or 58% of the entire population.[33] This increased to 75% by April 20. 823,347[34] people had been finally immunized in the campaign that followed the identification of the yellow fever flavivirus.

It was fortunate that the mechanism for emergency immunization as well as mass immunization was already set with the establishment of CAREC and its foreign investors, PAHO and the Overseas Development Ministry. The government was quickly able to harness the necessary international support needed for such an ambitious undertaking. Since the 17D vaccine is short lived, and the demand for mass vaccination to combat outbreaks is erratic, it would have been a problem to obtain at short notice the large supply of needed vaccine. WHO stocks an emergency reserve supply and was of assistance in the project.[35] Indeed, PAHO not only provided 15,600 free doses of the vaccine to various Caribbean countries, but they also assisted with the garnering of vaccines, needles, syringes and the loan of jet injectors,[36] each capable of carrying out 500 to 1000 yellow fever vaccinations per hour, with a seroconversion rate of at least 90%.[37]

But because immunity following the vaccination appears after 7 to 10 days, there is no doubt that vector control would serve a complementary function in an outbreak of yellow fever.[38] The vector population can be brought under control by several insecticides, supported by larvicides, though organochlorine compounds (such as DDT) are not suitable for use because of widespread resistance of *A. aegypti* to these chemicals.[39] There must also be a continuous program of preventive measures

directed against *A. aegypti*. These include source reduction, the screening or covering of water containers, and the destruction of old tires, derelict vehicles, tins and jars that may provide a breeding place for the vector.[40] Preventive measures must also include a comprehensive program of insecticide use especially when the cooperation of the community is difficult to obtain. In 1979, *A. aegypti* eradication in Trinidad had been further strengthened by the new legislation for source reduction and the use of aerial and ground application of insecticides.[41] Aerial spraying may be of special importance in combatting the sylvanic vector.[42] Eradication of *A. aegypti* is an expensive undertaking and is especially frustrating if some countries are not undertaking eradication. They serve to reinfest those that do.[43]

Trinidad had combined emergency immunization immediately after the offset of the disease and routine mass immunization in interepidemic periods. Although a single immunization probably grants immunity for life, a preventive program for routine mass immunizations seems more rational than the "fire-fighting" methods used in emergency immunization where there is not time to ascertain the immune status of each person. The mass immunization programs has the ultimate aim of protecting the entire susceptible population, but is more costly in the long run. Births and immigration in to the area both dilute the coverage rate. Vaccination campaigns need to be repeated, further increasing the cost. The adoption of either method of approach will depend on cost-benefit studies that should be undertaken before the decision is made.[44]

An ongoing routine immunization program in Trinidad, directed at one-year-old children, was begun in 1979 covering approximately 70% of the population.[45] When further yellow fever virus activity was to surface in December 1988, with red howler monkeys (*Alouatta sp*) dying in the southeastern forested areas, no human cases of yellow fever emerged.[46] It is therefore possible that the high percentage of vaccine coverage prior to 1988 provided sufficient herd immunity[47] to halt any epidemic.

The question that remains is one of health-care politics. Can the government maintain its high level of vaccination coverage? Will the ruling government be able to fend off yet another epidemic if another cycle of yellow fever virus activity were to return in a decade when the coverage rate might be decreased? Some health care experts say that once the virus remains localized, it will not pose much of a threat.[48] If it spreads, the government will definitely require assistance. In 1982 the cut in oil prices and a corresponding fall in petroleum production, combined with a world recession, left the heavily oil dependent economy of Trinidad in near disarray. Government reserves of foreign exchange took a precipitous drop from $2,893,000,000 at the end of 1982 to $274,000,000 by the end of 1986.[49] The government was forced to devalue its currency twice in three years, first by 33.3% in December, 1986, and then by 18% in August, 1988. The government has therefore had to impose cuts across the board with the result that in a country where health care is almost all nationalized, health care commitments in certain key areas has suffered.

The control of yellow fever requires the closest coordination of the units of the Ministry of Health responsible for surveillance, immunization and vector control, the Forestry Department, the Hunters Association, CAREC and PAHO. It also requires that each individual maintain a high level of awareness of the disease and participate in seeking immunization and clearing potential breeding surfaces of the vector.

Yellow fever continues to be thought of as some disease long banished, never to resurface again. Whereas medicine has certainly come a long way in bringing us a clearer understanding of the disease that once ravaged the Americas, the yellow fever of our time is far more deceptive. It seeks refuge in the tough ecological shield of the forest, patiently biding its time until the right moment when, once again, it will unleash its venom. So, too, does the *Aedes* vector mark its time. Diminished motivation to combat the mosquito combined with the breakdown of eradication and control programs have resulted in it becoming a true *Sword of Damocles* of our day. The challenge remains.

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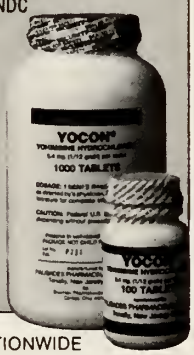

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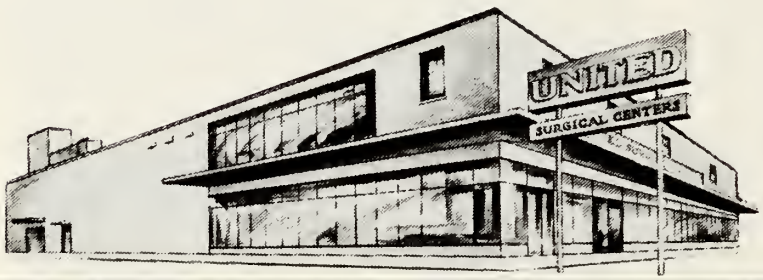

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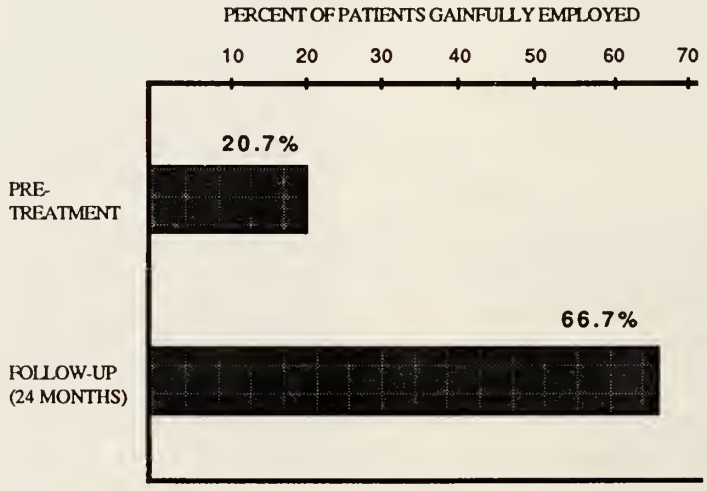

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Rhode Island's Contributions to Medicine

Few historians doubt the importance of Benjamin Waterhouse in American medicine, despite varied interpretations of his controversial professional career. In recognition of this, the Journal offers two biographies, one written by a graduate student at Brown University, Yoshio Higomoto (whose doctoral thesis is, "The Democratization of Republican Medicine: Benjamin Waterhouse and Medical Men in Massachusetts".).

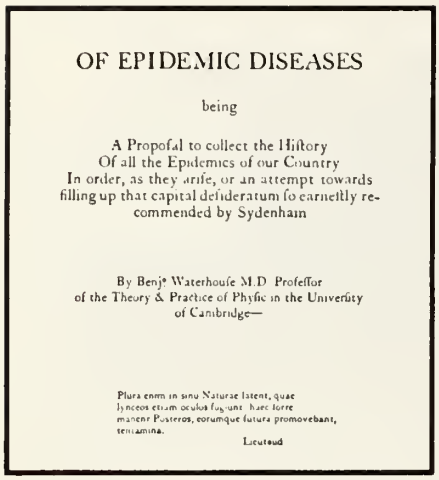
Benjamin Waterhouse and the Kine-Pox Inoculations

Benjamin Waterhouse, Harvard's first professor of medicine and the physician who introduced small pox vaccination to the Western hemisphere, was born in Newport, Rhode Island on March 4, 1754. He lived a long, productive, and often controversial, life dying in Cambridge during his ninety second year.

Medicine as a career was not totally alien to the Waterhouse home. Benjamin's father, a moderately prosperous Quaker cabinetmaker, was the great-grandson of a Boston surgeon; and his mother was cousin to the eminent London physician John Fothergill.

Waterhouse matured in mid-eighteenth century Newport, a thriving mercantile port, the administrative locus of Rhode Island and the intellectual center, then, of southern New England. He was the schoolmate of Gilbert Stuart who was to achieve international fame as a portrait artist. (A Stuart portrait of Waterhouse survives in the Redwood Library, Newport.) The pastor of Newport's Second Congregational Church was Ezra Stiles later to become Yale's president. (Stiles, a friend of Ben Franklin's, was also to establish and direct Yale's first laboratories devoted to astronomy and meteorology.) At age 16, Waterhouse was apprenticed to a former maritime surgeon named John Halliburton and Newport's leading physician. Five years later Waterhouse sailed to Europe to further his study of medicine under the guiding tutelage of Fothergill in London and later, Munro in Edinburgh. In 1778 Waterhouse voyaged to the European mainland, entered formal classes at the University of Leyden and was awarded the MD degree, with highest honors, in 1780. His doctoral thesis described ". . . *the harmony of the parts of the human body and its necessary consideration for explaining and curing diseases.*" The original manuscript is now preserved in the Harvard Medical Library.

Following the customary postgraduate year of travel and study in Europe, Waterhouse returned to his native city of Newport and established his practice on the remnants of Halliburton's patient roster. (Halliburton, a Tory loyalist, had



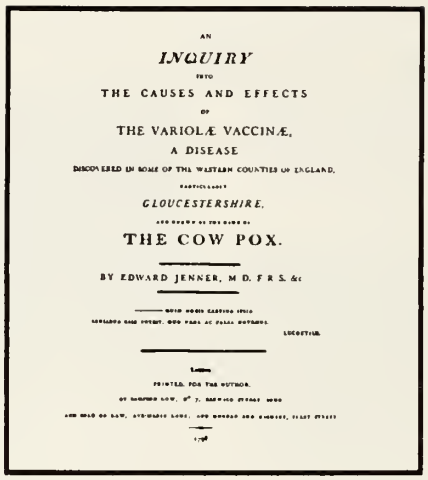
OF EPIDEMIC DISEASES

being

A Propofal to collect the Hiſtory
Of all the Epidemics of our Country
In order, as they ariſe, or an attempt towards
filling up that capital deſideratum ſo earneſtly re-
commended by Sydenham

By Benjª Waterhouſe M.D Profeſſor
of the Theory & Practice of Phyſic in the Univerſity
of Cambridge—

Plura enim in ſinu Naturae latent, quae
lynceos etiam oculos fugiunt: haec forte
manent Poſteros, eorumque futura promovebant,
tentamina.
Lucretius

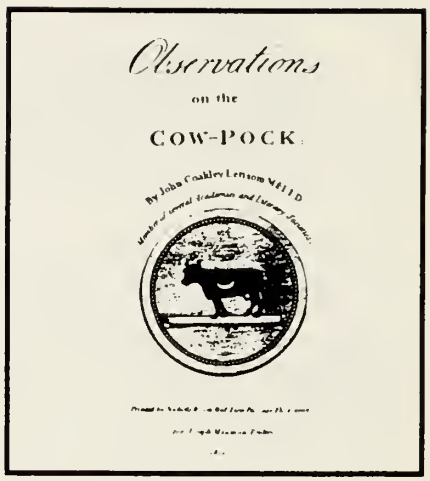


AN
INQUIRY
INTO
THE CAUSES AND EFFECTS
OF
THE VARIOLÆ VACCINÆ,
A DISEASE
DISCOVERED IN SOME OF THE WESTERN COUNTIES OF ENGLAND,
PARTICULARLY
GLOUCESTERSHIRE,
AND KNOWN BY THE NAME OF
THE COW POX.

BY EDWARD JENNER, M.D. F.R.S. &c

LUCRETIUS

PRINTED FOR THE AUTHOR,



Observations
on the
COW-POCK.

By John Coakley Lettsom M.D.

abandoned his practice in 1775 and had fled to Nova Scotia.) Shortly after his resumption of practice, Waterhouse joined the board of Fellows of the College of Rhode Island (later to be called Brown University) and, until 1791, was its principal instructor in natural history and applied botany.

In September of 1783, The University at Cambridge (ie, Harvard) through its Overseers and President, declared that it would be of great advantage to the public if a Medical Institution were established and ". . . *that its success may surpass even their most sanguine expectations.*" The first declared need was for a modern library "... *enriched with a collection of the most approved authors in anatomy, surgery, physic, chymistry, &c.*" Three professorships were then to be established in anatomy & surgery, the theory & practice of physic, and the materia medica and chymistry. Qualifications for these teaching posts were described as follows: "*That each Professor be a Master of Arts or graduate Bachelor or Doctor in Physic, of the Christian religion, as it is maintained in the churches of the Protestant communion, and of strict morals.*" Waterhouse was chosen for the professorship of Theory & Practice of Physic despite substantial opposition by his Massachusetts colleagues, largely because of his Quaker persuasion. The other two chosen Professors were Drs John Warren and Aaron Dexter.

The lectures delivered by Waterhouse in Cambridge were essentially similar to those concurrently rendered at Brown: a sequence of erudite discussions on the pharmacological effects of natural substances upon the functions of the human body. His talks were augmented by his unique notebook of pressed botanical specimens called a dry garden (Hortus Siccus) and still preserved in the Boston Medical Library. His personal collection, largely North American flora classified by the Linnaean system, included 105 allegedly active botanicals including Phytolacca (pokeweed), Sanguinaria canadensis (bloodroot), Datura stramonium (Jimson weed), Kalmia latifolia (laurel), Rhus toxicodendron (poison ivy) and Jesuits' bark (quinine).

While teaching at both Brown and Harvard, Waterhouse presented a paper before the American Academy of Arts & Sciences, in 1783, appealing to his colleagues, after citing the examples of Hippocrates and Sydenham, to record with diligence the character and manifestations of each epidemic disease as it arose. For, as he stated, "*The Gout, the Pleurisy, the Dropsy and the Stone are fixed diseases, but Epidemics are not like them reduced to certain rules.*" Waterhouse believed that changes in the air . . . "*produce a general state of health or disease.*" And that air " . . . *is a chaos of all things: in it float up and down the attenuated particles of all bodies whatever.*" He reflected further, "*By heat and other causes the little corpuscles arising from bodies rotting, or burnt, the exhalations of animals or vegetables, and lastly from the earth herself are kept in perpetual motion.*" His appeal for the establishment of a primitive epidemiological surveillance network in New England went unheeded.

It would be impossible for an eighteenth century practicing physician to be untouched or undismayed by endemic smallpox. Virtually every town had its isolated small pox hospital and this contagion was responsible for a substantial fraction of deaths below the age of ten. Many of the more educated had their children deliberately inoculated with variolous pus

under the presumption that a usually mild case of small pox under controlled circumstances was to be preferred to the capriciously contracted, more often malignant, natural illness. This process of variolation, employed since the early years of the eighteen century, had been advocated by such community leaders as Cotton Mather, Dr Zabdiel Boylston, and Thomas Jefferson. It carried a measurable risk but was regarded as a protective measure.

In 1796 a country practitioner in Glocestershire named Edward Jenner transferred the lymph from a cow-pox pustule to the abraided skin of an eight-year-old boy who had not previously been afflicted with small pox, either naturally or through variolation. Forty six days later he deliberately inoculated the child with variolous fluid. No small pox developed. Subsequent human experimentation, including inoculation of his infant son, verified the protective nature of cow-pox infection and Jenner published his findings in 1798. (The word, vaccination, from the Latin *vaccinus*, of cows, was not used till many years later.)

In the early months of 1799 Waterhouse received a copy of Jenner's text from a London friend, Dr J.C. Lettsom.

Waterhouse then received cow-pox (Variola vaccina) lymph from Lettsom and later from Dr Haygarth of Bath, England and Jenner himself. The vaccina lymph, incidentally, was shipped across the Atlantic sandwiched between two small squares of glass and sealed with wax; it was said to be still biologically active for intervals up to four months.

In his subsequent tract entitled "*A Prospect of exterminating the Small pox, etc.*", Waterhouse commented, "*I commenced the experiment, July 8th, 1800, on my own children, four of whom, with three of my domestics, passed regularly through the distemper; and they soon after went into the licensed small-pox hospital in this neighbourhood, and all seven of them were inoculated by Dr Aspinwall with the matter of the small pox, without the least trait of infection.*" Waterhouse's treatise on small pox prevention was the first to be published in the western hemisphere, and received the enthusiastic, written endorsement of both John Adams and Thomas Jefferson. The text was a bold commentary which suggested that a major disease, small pox, might be exterminated by human intervention. It would require another 176 years, however, before the desired worldwide extinction of small pox became a reality.

Waterhouse was inundated by New England physicians with requests for the cow pox vaccine. (Waterhouse preferred to call it Kine-Pox; kine is a rarely used Old-English plural form of the word cow.) For a while Waterhouse maintained a monopoly of this newly devised protective procedure but gradually he entered into contractual arrangements with selected New England practitioners. His letter to Zacheus Bartlett was typical: "*This certifies that I have given to Dr Zacheus Bartlett the matter of the Kine-pox for the purpose of inoculation in Plymouth but not to supply any other practitioner.*" In most instances the kine-pox fluid was distributed only after the practitioner agreed " . . . *to give me one quarter of the neat profits.*" To his supporters, Waterhouse's attempts to control the distribution of the vaccine were commendable since it was said to establish qualification standards for those inoculating the preventive agent while simultaneously regulating the procedures by which it was given. To his detractors, the majority of local physicians, his monopolistic domination of the fluid was morally indefensible.

After a series of disputes with the college administrators as well as his colleagues, Waterhouse was asked to resign his professorship. In 1811 he retreated to his modest practice in Cambridge augmenting his income with a modest governmental sinecure. In the succeeding 35 years Waterhouse continued to practice and was the author of numerous texts on travels in North America, mineralogy, and applied botany. His pamphlets, some polemical, often described the evils of tobacco and strong spirits.

The year 1846 was not without memorable historic events: It was the year of the great potato famine in Ireland; the Mexican War, under the Presidency of James K. Polk; the first recorded use of ether gas as an anesthetic for a surgical procedure; and the death of Dr Benjamin Waterhouse. He had been born when King George II ruled over the Rhode Island and Providence Plantations; he lived, contentiously but productively, through the terms of eleven presidents, and left his indelible mark upon medical education, applied botany and preventive medicine in the United States.

Stanley M. Aronson, MD

The Introducer of Jenner's New Vaccination into America

When he returned to New England in 1782, following seven years of medical study abroad, Waterhouse was perhaps the best educated physician in the New World. With independence from England in 1783, his future career in the new nation appeared very promising. In the same year he was invited to be Professor of Theory and Practice of Physic at the newly-established Harvard Medical School. He was only 29 years old, a young and enthusiastic physician.

Thanks to his close connections with several eminent English doctors, he received Jenner's medical pamphlet on vaccination in 1799, before any other American physician. Waterhouse immediately appreciated the value of the new procedure. "On perusing this work (Jenner's *Inquiry*), I was struck with the unspeakable advantages that might accrue to this country, and indeed to the human race at large, from the discovery of a mild distemper that would ever after secure the constitution from that terrible scourge, the smallpox."

Throughout the eighteenth century smallpox was a dreaded disease to American colonists. Although inoculation had been practiced since 1721 in Massachusetts, it was not an ideal preventive agent against small pox. As late as 1751, for instance, 2,124 persons were inoculated in Massachusetts, of whom 30 died – a 1.4% death rate. Inoculation was an effective but at best risky business. Recurrent smallpox epidemics continued to afflict men and women in the New World.

In July 1800 Waterhouse succeeded in obtaining fresh vaccine material from England and vaccinated his son. Before long he brought his son to Dr Aspinwall's Inoculation Hospital where Waterhouse had his son exposed to smallpox patients. The result of this bold experiment was superb; his son resisted the smallpox virus. Encouraged by the experiment, Waterhouse tried to persuade the public and his fellow physicians to adopt the new vaccination. The response was meager.

Because he came from Rhode Island and was a Quaker, he was regarded as an outsider in the closely-connected, homogenous medical and social circles of Massachusetts. More important, Waterhouse's sympathy with the Jeffersonian cause worsened his relationships with physicians such as John Warren, Aaron Dexter, James Jackson, and other influential members of the Massachusetts Medical Society who abhorred the rise of Jeffersonianism in the new republic. In the eyes of most members of the Boston elite who were largely strong supporters of Federalism, Jeffersonians were immoral Democrats influenced by the fanatic French Revolution.

In this political and social setting Waterhouse began his advocacy of the new method of vaccination. In the early stages he kept the vaccine material under his tight control by means of contractual agreements with selected physicians, contracting with them for one quarter of the profit from the vaccination business in exchange for fresh vaccine material. Waterhouse's monopolistic conduct soon aroused hostility among New England physicians. He was publicly accused of immorality and of selfish attempts to make profits from Jenner's discovery. The lack of unity and the politicization of disputes within the medical profession thus delayed the adoption of the new vaccination in Massachusetts. It was not until August 1802 that the Boston Board of Health, persuaded by Waterhouse, conducted a public test of the new vaccination.

Satisfied with the result of this experiment, the Board of Health urged the public to adopt the new vaccination. Most doctors in Massachusetts had now accepted the new vaccination as a safe and effective method. Meanwhile Waterhouse had been corresponding with President Jefferson asking for his patronage of the new method and requesting that the federal government control the supply of the vaccine. When Waterhouse sent Jefferson his *A Prospect of Exterminating the Small-Pox*, Jefferson read it "with great satisfaction" and wrote back to Waterhouse: "Every friend of humanity must look with pleasure on this discovery, by which one evil more is withdrawn from the condition of man; and must contemplate the possibility, that future improvements and discoveries may still more and more lessen the catalogue of the evils. In this line of proceeding you deserve well of your country; . . ." In addition, Jefferson helped to distribute the vaccine material received from Waterhouse to Virginia, Pennsylvania, and areas of the South.

Waterhouse's hopes materialized in 1813 when President Madison signed an "Act to Encourage Vaccination" and appointed Dr James Smith of Maryland as agent for the distribution of vaccine material. But the rapid dominance of liberal and pluralistic political culture in the 1820s generated an antagonistic atmosphere against federal intervention and regulation of commerce, banking and medicine. Under these conditions, the law of vaccination was repealed and Dr Smith was removed from office in 1822. To make matters worse, doctors of a new generation, who had never experienced smallpox, came to think lightly of vaccination.

Greatly frustrated by this medical atmosphere, Waterhouse wrote to a friend: "The smallpox is creeping through the country; and if Congress will not now do something to aid the cause of suffering humanity, and make some expression of the sense they have of past labours in that cause – I never will hereafter utter a word; . . ." Waterhouse was right; long after Jenner's vaccination was introduced into America, smallpox epidemics still occurred. After 1840, to Waterhouse's dismay, the incidence of smallpox gradually rose. On October 2, 1846, Waterhouse died in Cambridge. It was not until the last quarter of the 19th century that an effective campaign of smallpox control and prevention was finally launched.

Although Waterhouse initially sought profits from the new vaccination, his conduct cannot be considered to have been immoral or selfish. Such contractual agreements on inoculation were a common practice in England. His subsequent efforts to propagate Jennerian vaccination were sincere and his attitudes towards vaccination were more farsighted than other physicians of his generation. In this respect, Waterhouse deserves the title of "the Jenner of America."

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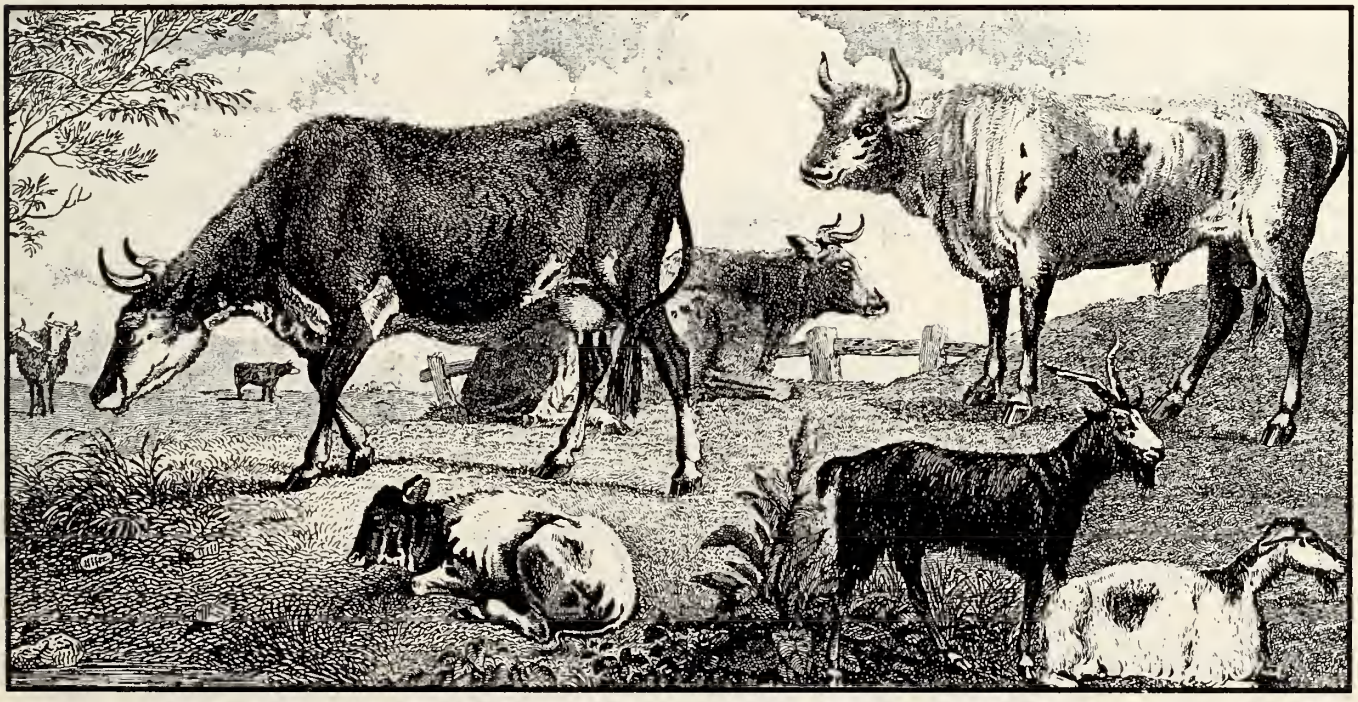
1. B. Waterhouse, *A Prospect of Exterminating the Small-Pox* (Boston, 1800), pp. 3-4..
2. T. Jefferson to B. Waterhouse, December 25 1800, quoted in Robert H. Halsey, *How the President, Thomas Jefferson and Doctor Benjamin Waterhouse Established Vaccination as A Public Health Procedure* (New York, 1936), p. 17.
3. B. Waterhouse to John Bailey, January 1 1827, Washburn Papers Vol. 20, Massachusetts Historical Society.

Yoshio Higomoto
Graduate Student,
Brown University



HEALTH BY NUMBERS

Rhode Island
Department of Health
H. Denman Scott, MD, MPH
Director of Health

The Face of AIDS in Rhode Island

The annual incidence of AIDS in Rhode Island has remained relatively stable since 1988 (Table 1). Rhode Island continues to maintain an overall moderate prevalence relative to the cumulative number of cases reported in the United States, ranking 36th among all states including the District of Columbia, and 3rd in New England after Massachusetts and Connecticut. The number of cases reported in males has consistently been markedly higher than in females, with the annual percentage of cases in females declining since 1988. However, this percentage (15%) has consistently been statistically higher than the national proportion of AIDS cases in females (10%).

The primary mode of transmission among white males is homosexual contact, with intravenous (IV) drug use the most common transmission mode reported for black and Hispanic males. Seventy-nine percent of all AIDS cases in females are associated with IV drug use or heterosexual contact with IV drug users (Table 2). The proportion of cases reported in people of color has consistently represented one-third of the total cases reported each year; however, people of color in Rhode Island represent 8.6% of the total population in RI. From 1987 through 1990 cases in homosexual men and IV drug users remained relatively stable. However, cases reported in persons exposed through heterosexual contact in 1990 were a significantly higher proportion than in previous years (10% vs 4%).[1]

An estimate of survival with AIDS shows that females with AIDS are surviving slightly longer than males. Table 3 shows that 50% of males survive 15 months post diagnosis while 50% of females survive 20 months. The availability of AZT and other treatment modalities have extended the life expectancy of both males and females. This may account for the increase in the median survival seen after January 1988 in both males and females. Prior to January 1988, the median survival time for males and females were 13 and 10 months, respectively. Since AZT has been available (after January 1988) the median survival time for males is 17 months; this latter estimate cannot be calculated for females as less than 50% are deceased; however, the median survival time will be greater than 20 months.

References

[1] AIDS/STD Program, RI Department of Health: HIV/AIDS Surveillance Report, December 1990.

Table 1. Annual Incidence of AIDS in Rhode Island: Date of Report vs Date of Diagnosis of First Illness, as of December 31, 1990.

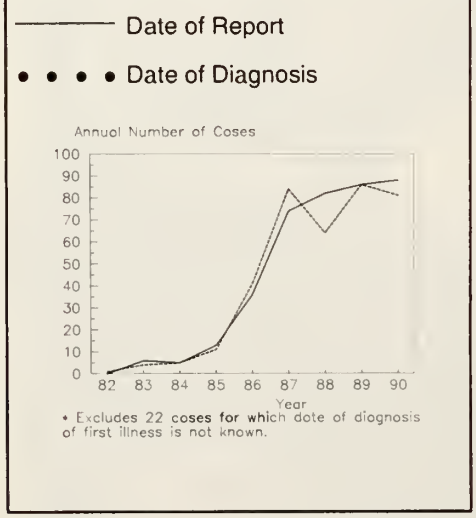


Table 2. AIDS in Rhode Island: Sex by Transmission Category, as of December 31, 1990.

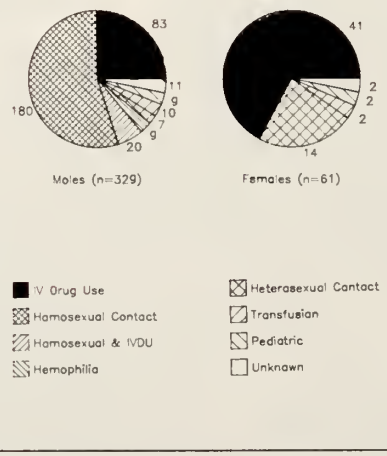
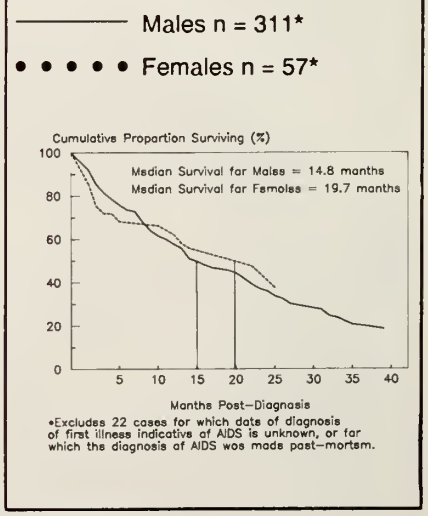


Table 3. Estimated Survival for Rhode Island AIDS Cases Reported through December 31, 1990.


Males n = 311*
Females n = 57*
Cumulative Proportion Surviving (%)
100
80
60
40
20
0
Median Survival for Males = 14.8 months
Median Survival for Females = 19.7 months
5 10 15 20 25 30 35 40
Months Post-Diagnosis
*Excludes 22 cases for which date of diagnosis of first illness indicative of AIDS is unknown, or for which the diagnosis of AIDS was made post-mortem.

Submitted by the Office of Disease Control, AIDS/STD Division, Barbara A. DeBuono, MD, MPH, Medical Director and Mary Lou DeCiantis, PhD. Health by Numbers *is edited by Jay S. Buechner, PhD, and William J. Waters, Jr., PhD.*

THE RHODE ISLAND MEDICAL JOURNAL

The Official Organ of the Rhode Island Medical Society
Issued Monthly under the direction of the Publication Committee

VOLUME I
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PROVIDENCE, R. I., JANUARY, 1917

PER YEAR $2.00
SINGLE COPY, 25 CENTS

THE RHODE ISLAND MEDICAL JOURNAL HERITAGE

Ninety Years Ago
(July, 1901)

The first of four editorials addresses the vexatious problem of contagion and the street car. "The most likely means of contagion, overcrowding," says the author, "is not so easy to do away with." The editorial continues: "The sanitarian . . . could never prove that a single case of small pox or scarlet fever or diphtheria was ever contracted in the crowded car." The editorial, while acknowledging the risk of contagion, also recognizes another great hazard induced by riding the street car. "Some day some champion of propriety will perhaps stand on Westminster Street and notice . . . examples of a more promiscuous crowd than ever entered a Roman bath all herded together to a degree of intimacy of which the bath was never guilty."

A second editorial advocates a clearer legal definition of what constitutes the practice of medicine. It argues that the letters or words such as MD, Doctor, Dr, Professor, or Healer be restricted to those in the licensed practice of medicine and that, ". . . the osteopathic fakir, the faith curist . . . and the hundred other forms in which rampant quackery manifests itself . . ." be prevented from entering the practice of human medicine.

A third editorial discusses the problem of disposing of household garbage – and commends the Providence City council for a notable step forward. The Saturday garbage is now swept up, such that the populace attending church on Sunday mornings is no longer offended by litter on Westminster Street. The collected sweepings are of monetary value since farmers are said to pay up to two dollars per ton of the manure-rich collections.

The major scholarly contribution to this issue is a lengthy and scholarly essay by G. Alder Blumer, MD, superintendent of Butler Hospital discussing, "The Yesterday and Today of Mental Hygiene." He notes that much is heard of " . . . the relative backwardness of psychiatry compared with the high state of cultivation of other special departments of medicine." Much of this is accounted for, he believes, by the paucity of neuropathological studies in psychiatric disorders. In reviewing the historic roots of psychiatry, the author talks of the dark ages and condemns "... the makeshift of ascribing misunderstood things to the Divinity, the invariable refuge of the ignorant."

After a frank description of such institutions as Bedlam, Blumer then describes the notable contributions to humane, empathic psychiatry by the courageous contributions of Tuke in England, Pinel in France, and to a lesser degree, by Benjamin Rush in the United States. Rush's failings, his advocacy of blood-lettings, cold water treatments and the strait-jacket ("straight waistcoat") are also aired.

Blumer reserves his greatest admiration for Dorothea L. Dix. "There died at Trenton, NJ fourteen years ago, a nonagenarian philanthropist to whom this country owes more than to any other person for what has been accomplished on behalf of the insane, . . .a career of humanitarian effort that has never been surpassed."

The essay ends with quota-

tions from the 1854 report of Blumer's predecessor, Dr Isaac Ray, concerning the possible role of heredity in the etiology of mental disease.

There are further papers on transient (simple) glycosuria and endocardial and exocardial murmurs.

Fifty Years Ago (July, 1941)

The lead article is a short biography of Benjamin Waterhouse by H.G. Partridge, MD (see elsewhere in this issue for other commentaries on the life of Waterhouse). In addition to the more notable aspects of Waterhouse's professional life, the article also dwells upon Waterhouse's childhood and early schooling in Middletown, Rhode Island. He attended Dean Berkley's academy where his closest schoolmate was Gilbert Stuart later to become the famous portrait painter of George Washington. It is said that both were interested in painting and each painted a portrait of the other. Unfortunately, only Stuart's portrait of Waterhouse is preserved (and may be found displayed in the Redwood Library in Newport). Partridge also describes Waterhouse's formal medical education at the University of Leyden and his year of post-graduation travel (1781-82) in Europe. It was during this interval that Waterhouse made friends with Franklin, John Adams and his son John Quincy. Waterhouse lived most of his professional life in Cambridge, Massachusetts. He nevertheless cherished the memory of his birthplace, Newport, and envisaged that port, one day, to become like the city of Bath in England, "a haven of rest and recuperation for invalids." He died on October 12, 1846, sixty five years after receiving his MD degree and is buried in Mount Auburn Cemetery.

An article written by L.E. Burns, MD describes lung involvement secondary to infections of the upper respiratory tract. To prove that post-nasal drainage may indeed seep down to the lower bronchial tree, the author undertakes the following experiment: With the patient on his back, a soft rubber tube is inserted into the nose and the patient allowed to fall asleep. When asleep about one ounce of lipiodol is allowed to run down the posterior wall of the nasopharynx. X-rays showed that the radio-opaque lipiodol ended up mainly in the right lower lobe. The author believes that this demonstrates the gravitational path of spread from infections of the nasopharynx to the lower respiratory system, particularly when the patient is asleep and the gag-reflex reduced.

A brief article by H.G. Calder, MD describes measles, a disease thought to be caused by a filterable virus. He notes three substances used to modify this disease (which the author states, carries a 2% case mortality rate). Adult blood, convalescent serum and placental extract. Convalescent serum (6-8 cc) on the fourth or fifth day after exposure will sometimes prevent the disease entirely but will certainly cause a modified measles. This intervention does not "secure a lasting immunity."

E.F. Kelly, MD discusses immunization against diphtheria. He notes that there has been but one death in Providence from diphtheria during the past three years. He recommends: ". . . toxoid inoculations . . . should be given at the ninth month and . . . should be given in multiple doses of 2-3 injections. Whether the plain or alum precipitate is used is immaterial. The Schick test should be carried out to determine whether immunity is present six months after the immunization."

John G. Walsh, MD summarized maternal mortality in the state of Rhode Island for the year 1940. There were 25 maternal deaths and six non-obstetrical maternal deaths. Four of the deaths were from abortion, two said to be self-induced. Other specific abuses included toxemia of pregnancy, uterine rupture and placenta previa. Of the non-obstetrical causes there were cases of pulmonary tuberculosis, rheumatic heart disease and bacterial endocarditis.

The Annual Meeting of the State Medical Society, this year, is held in the Viking Hotel, Newport. A summary of the scientific papers is printed (and many of these are subsequently published, in their entirety, in the *Journal*). One of the guest speakers is Frank Lahey, MD, president-elect of the American Medical Association.

The secretary of the Society reports that in the past year, 18 new members were added and the membership now stands at 496. The Treasurer's report indicates a total yearly Society expenditure of $7,114.28.

There is an obituary for Harry S. Flynn, MD, a Rhode Island pioneer in industrial medicine.

The prices of the many new text books in medicine, reviewed in this issue of the *Journal*, vary from $1.50 to $14.00. Griffith and Mitchell's textbook of pediatrics (991 pages) sells for $10.00.

Twenty-Five Years Ago (July, 1966)

Donovan Ward, MD, immediate past-president of the American Medical Association writes the lead paper entitled, "The Effect of Medicare on Physicians."

He first describes the stated position of the AMA: "Your AMA considers the law unnecessary and unwarranted and not in the public interest. We felt this way before the law was passed and we have not altered that opinion even though it has passed. You will recall that time and time again we said that two things were needed to make a federal law financing health care for the aged a wise law and a good law. One was that it had to be limited to the needy. The other was that it had to be administered by the several states." After a detailed description of the likely effects of this new legislation upon such aspects as utilization review committees, direct billing and assignment, private carriers, and home health care, he concludes with the plea: "We need your keen desire for freedom in medicine. Without it we shall fail in our stewardship to humanity."

The second contribution is a speech by W.J. Cohen, Undersecretary of Health, Education and Welfare given at the dedication of the new building of the Miriam Hospital. The paper , "Improving the Nation's Health," outlines the likely achievements of medicine and medical science in the next few decades. He ends his speech extolling "the creative partnership" between the private and public sectors in creating enduring institutions which protect the health of our communities.

The *Journal* summarizes a symposium, sponsored by the New England Diabetes Association, on recent advances in the understanding and treatment of diabetes mellitus.

H.A. Savitz, MD provides a biography of the great Italian physician, Abraham Portaleone (1542-1612).

Long before legislation requiring the active use of seat belts in cars is passed, the *Journal* runs an editorial stating, " . . . as many as 12,600 lives could be saved each year if people could be induced to use seat belts. . ."

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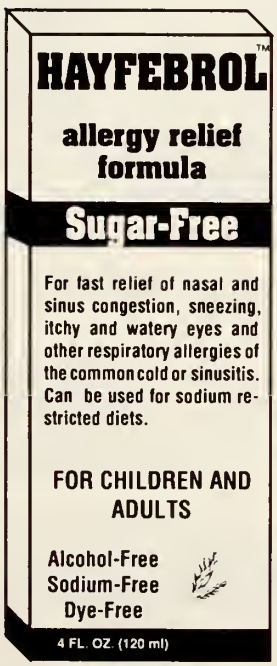
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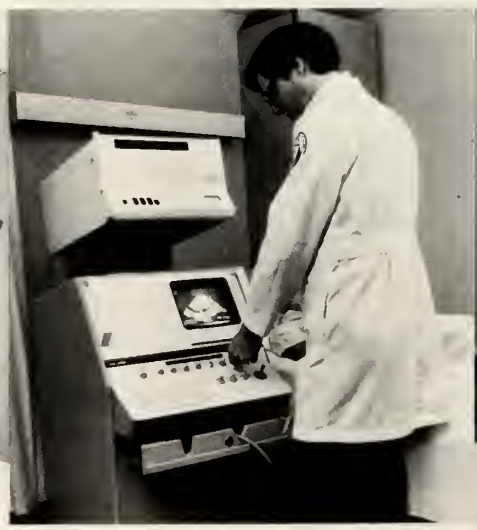

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